



GUIDE FOR BUILDING AND CLASSING

INTEGRATED TUG-BARGE (ITB) COMBINATIONS INTENDED TO OPERATE ON THE GREAT LAKES

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Introduction

This Guide is prepared for the building and classing of Integrated Tug-Barge Combinations Intended to Operate on the Great Lakes. In addition to the class notation as specified in Section 1 of this Guide, the following special comment, as applicable, will also be published in column 5 of the *Record* for both the tug and barges in compliance with the Guide:

Special Comment 24: This vessel is fitted with special arrangements to be part of an integrated tug/barge combination.
(The vessel indicated in parenthesis forms the other part of the integrated tug/barge.)

Special Comment 25: Classed to operate as an integrated tug/barge combination.
(The vessel indicated in parenthesis forms the other part of the integrated tug/barge.)

Special Comment 27: This vessel is part of an integrated tug/barge unit but is not limited to one tug/barge combination.

In view of the nature of the intended operations within the recognized boundaries of the Great Lakes System, all statutory requirements as required by the Flag Administration are to be complied with (e.g. the Code of Federal Regulations 46 and NVIC 2-81, "Coast Guard Inspection Guidance Regarding Integrated Tug Barge Combinations" for US-flag vessels). Under the Title 46 CFR, all tugs intended to operate on the Great Lakes are categorized as "uninspected vessels". The Coast Guard maintains an "Uninspected Towing Vessel Exam Checklist" on their web site, which lists specific requirements as required by the CFR, Titles 46 and 33.)

The requirements in this Guide are primarily applicable for new construction and become effective upon publication.

1 General

1.1 Classification

An Integrated Tug-Barge (ITB) is a tug-barge combination wherein a tug is mated to a barge with a specially designed connection system such that the tug is secured in the barge notch or on fenders by mechanical means of any type whatsoever other than just wire ropes, chains, lines or other tackles.

The tug and the barge are to be classed as two separate vessels but will be cross-referenced in column 5 of the *Record*.

1.1.1 Towing Vessel – Dual Mode (Articulated Connection)

The tug will be classed and distinguished in the *Record* by the notation **⌘A1 Towing Vessel Great Lakes Service, DM**, which is in full compliance with the requirements of the Part 5, Chapter 8 of the *Rules for Building and Classing Steel Vessels Under 90 Meters (295 feet) in Length*, and signifies that the vessel has the dual mode (DM) capabilities, pushing the barge in ITB mode and towing the barge by hawser in a separate mode.

1.1.2 Integrated Towing Vessel – Pushing Mode (Rigid Connection)

The tug will be classed and distinguished in the *Record* by the notation **⌘A1 Towing Vessel Great Lakes Service, PM**. This class notation will be assigned to a tug which does not meet the requirements for intact stability during tow as specified in the Part 5, Chapter 8, Section 2 of the *Rules for Building and Classing Steel Vessels Under 90 Meters (295 feet) in Length*, but does meet the requirements of the rest of the above Rules, and is intended to operate in a pushing mode (PM) only and remain fixed to the barge throughout the voyage under all weather conditions.

1.1.3 Barge Class

The barge will be classed and distinguished in the *Record* by the symbols and designations in accordance with paragraph 1.11.2 of the *Rules for Building and Classing Steel Barges* followed by the geographical/operational limitation, **Great Lakes Service, DM** or **Great Lakes Service, PM**, whichever is applicable.

1.3 Application

The requirements of this Guide are applicable to integrated tug-barge combinations intended to operate on the Great Lakes in addition to the relevant requirements for hull structure, equipment, and vessel systems in Part 5, Chapter 8 of the *Rules for Building and Classing Steel Vessels Under 90 Meters (295 feet) in Length*, the *Rules for Building and Classing Steel Barges* or the *Rules for Building and Classing Bulk Carriers for Service on the Great Lakes*, as appropriate. For the same design, for any aspect of the hull structural design that is covered by more than one of these Rules, it is not valid to switch between criteria in these Rules.

1.5 Definitions

1.5.1 Rigid Connection System

A rigidly connected integrated tug-barge combination designed for pushing mode only is one in which the tug is connected to the stern of the barge in such a manner that there is no relative motion between the tug and barge, resulting in the two vessels acting as a single unit in a seaway.

1.5.2 Articulated Connection System

An integrated tug-barge connected by a system for dual mode operations that allows relative motion between the tug and the barge in one or more degrees of freedom is deemed to have an articulated connection system.

1.5.3 Length of Combination (L_c)

The combined length L_c , is to be measured with the tug and barge connected in their pushing mode. The combined length L_c is to be taken as the distance, in m (ft), measured on a waterline at 85% of the least molded depth of the barge, from the fore side of the stem of the barge to the after side of the rudder post or stern post of the tug. Where there is no rudder post or stern post, L_c is to be measured to the centerline of the rudder stock of the tug. L_c , however, is not to be taken less than 96% and need not be taken greater than 97% of the total waterline length of the combination measured at 85% of the least molded depth of the barge.

3 Plans

In addition to the plans required to be submitted by 5-8-1/7 of the *Rules for Building and Classing Steel Vessels Under 90 Meters (295 feet) in Length* and 1.13 of the *Rules for Building and Classing Steel Barges*, the following plans are to be submitted in the same manner.

General Arrangements of Combined Unit

Loading Manual

Hull structural details in way of the connection of tug and barge for each vessel

Structural analysis of the connection

5 Longitudinal Strength

5.1 Integrated Tug-Barge (ITB) with Rigid Connection

Where L_c of a rigidly connected Integrated Tug and a ship-shaped Barge (ITB) exceeds 122 meters (400 ft), the ITB is to have longitudinal strength in accordance with the requirements of Section 2 of the *Rules for Building and Classing Bulk Carriers for service on the Great Lakes*. Where the L_c of a rigidly connected ITB is less than 122 meters (400 ft.), the ITB is to have longitudinal strength in accordance with the following requirements:

$$SM = c_1 c_2 B d \quad \text{cm}^2\text{-m (in}^2\text{-ft)}$$

where

$$c_1 = 1.15$$

$$\begin{aligned} c_2 &= 6.4 \left[\frac{(L_c - 31)}{18} \right]^2 + 10.5 \left[\frac{(L_c - 31)}{18} \right] + 36 & L_c \leq 67 \text{ m} \\ &= 82.6 + 2.08(L_c - 67) & 67 \text{ m} < L_c \leq 122 \text{ m} \\ &= \frac{1}{10} \left[3 \left(\frac{L_c - 100}{60} \right)^2 + 5 \left(\frac{L_c - 100}{60} \right) + 17 \right] & L_c \leq 220 \text{ ft} \\ &= \frac{1}{10} \left[39 + \frac{3}{10}(L_c - 220) \right] & 220 \text{ ft} < L_c \leq 400 \text{ ft} \end{aligned}$$